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ABSTRACT

6 A freeform fabrication method for fabricating a 3-D, multi-material or multi-color object from
successive layers of a primary body-building powder, at least a modifier material and a binder
powder in accordance with a computer-aided design of the object. The method includes: (a)
providing a work surface; (b) feeding a first layer of the primary body-building powder to the
work surface; (c) operating an electrophotographic powder deposition device to create images of
at least a modifier powder and a binder powder in accordance with this design; (d) transferring
these powder images in a desired sequence to the first layer of a body-building powder; (e)
11 applying energy sources to fuse the binder powder for bonding the powder particles to form a
first cross-section of the object; (f) repeating the feeding, operating, transferring, and applying
steps to build a second and successive layers of materials in a layer-wise fashion for forming the
multiple-layer, multi-material object; and (g) removing un-bonded powder particles, causing the
3-D object to appear.